Edutainment

Terms of Reference

This report has been written in response to an assignment requesting an overview of Edutainment, including some detailed research, an overall summary and conclusion.

Scope

Given the constraints on the word count for this report it was decided to give a brief definition and descriptive introduction to the topic. Thereafter dedicated paragraphs addressed the more popular and widely used forms of edutainment, including the benefits and shortcomings of edutainment design and delivery.

Summary

This report attempts to give an overview of Edutainment and it's place in modern society.

Contents

Definition

There are various interpretations of the term '**Edutainment**'; consequently it would seem sensible to consider the literal meaning in the first instance.

NOUN: **1.** The act of learning through a medium that both educates and entertains.
2. Any of various media, such as computer software, that educates and entertains.

ETYMOLOGY: edu(cation) + (enter)tainment.

(The American Heritage® Dictionary of the English Language: Fourth Edition. 2000)

Edutainment is a term derived from the words *education* and *entertainment.*

Introduction

This amalgamation has been formed to describe a category of interactive titles that are designed to use media or multimedia, to motivate and inform the user (England and Finney 1999, p394). This definition has been sometimes further refined to suggest that one of the primary purposes of edutainment would be to provide educational material for use in the home or during leisure and recreational time.

A large proportion of purchases of edutainment material are by parents wishing to supplement their children's general education by providing additional learning material that is presented in an interesting and intuitive way. Usually this will take the form of information and learning material embedded within a game or adventure environment. This type of design utilises constructivist theories where learning is enhanced by involvement in activities that require the user to construct their own knowledge base and understanding of the underlying learning outcomes.

The intuitive nature of edutainment also attracts users of wide-ranging ages, especially where there is an element of skill or experience required to complete the objective, allied to considerable interactivity. Where older learners are involved the granularity and methodology of the edutainment will be in greater depth (Alessi and Trollip 2001, p148).

For users of infant, primary and secondary school ages the expectation is that edutainment will be in the form of a game where interactions are repeated to develop comprehension and understanding, sometimes known as "drills in game clothing". In other scenarios simulated journeys and construction activities can serve as simulations and tutorials that are transparent to the user (Alessi and Trollip 2001, p270).

By necessity edutainment must be engaging in order to maintain the interest of the user and the development of multimedia systems has been concomitant with the technology of the delivery platforms. This has spawned a profusion of computer software programmes that address the balance of education and entertainment in a variety of ways. The general acceptance of hypertext links for document navigation gave rise to their multimedia equivalent or hypermedia.

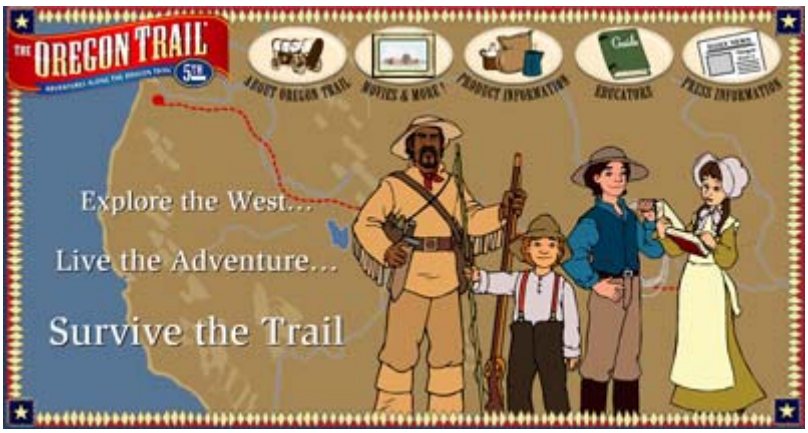
Hypermedia

Hypermedia programs will usually include text, still and moving images, graphics, animation, sound, music and interactivity. As with hypertext the navigation will not be linear and rather than text forming the active links that navigate the user around the website or programme, all of the media elements may be used as active links. This process has required the technology of multimedia database development and querying, to develop in order to seamlessly and reliably allow large and differing file types to be blended and presented simultaneously. Some form of testing, quizzing and tracking of the user's progress will identify and quantify effective learning transfer and comprehension.

Teachers can use hypermedia edutainment material for whole-class presentations, for small group work sessions or as homework for learning reinforcement. The learning content is embedded within the activities and will be accessed by completing tasks and answering questions. These may require the learner to explore a virtual world, answer questions following information presentations or construct real world models by preparing printable drawings and templates.

Educational Games

Although many educators may consider games to be inappropriate for older children and adults, there is a substantial market for computer games in skills and business training. Where hypermedia may not have a competitive element many training and business simulation programmes will replicate real world competition and cooperation. Where this blend of edutainment and competition exists the user is more intrinsically motivated to succeed, rather than extrinsically motivated to get a good grade (Allessi and Trollip, 2001 p271). Teamwork, persistence and information absorption will all reinforce the learning process, while the entertainment factor ensures retention of interest. There are many good examples of this genre such as the Oregon Trail Adventure which was originally created in 1974 and is now in it's fifth edition and available on a cd-rom or downloadable from The Internet (Oregon, 2003). In order to complete the trail successfully the user must reconcile various scenarios and learn to survive in this virtual wilderness by participation in interesting tasks and simulations.



Educational Game Factors

Apart from the challenge of survival and reaching a destination other educational factors can be embedded within the games. These can include:

- Goal attainment
- Rule compliance
- Logic
- Social skills
- Money and resources management
- Problem solving
- Languages
- Grammar
- Culture
- Safety
- Strategy
- Fantasy
- Teamwork
- Food recognition
- First Aid
- Constraints

Curiosity and Uncertainty

Human traits such as uncertainty and curiosity will serve to heighten the intrinsic motivation of the players. These can be induced by using strategies such as:

- Varying degrees and levels of difficulty
- Multiple goals and outcomes
- Invisible or hidden clues and information
- Random progress and responses to interactivity

Curiosity is a powerful motivator that can drive us to seek more information and knowledge beyond what we already know. In his books about cognitive psychology T.W. Malone (1980, p60) has expanded on the theories of the eminent child psychologist, Jeane Piaget (1952) who purports that an optimal level of information complexity will evoke a learner's curiosity. This optimal level should be neither too complicated nor too simple and should be both novel and surprising. It is also considered that the optimal complexity will require the user to have sufficient knowledge to expect and anticipate the progression through the programme, although they may not be able to fulfil their expectations.

Malone also refers to cognitive and sensory curiosity, which are used extensively on TV and in computer games.

Cognitive Curiosity

This is aroused by the desire to reconcile or resolve incomplete or contradictory situations, such as an incomplete story or apparently contradictory piece of information.

Sensory Curiosity

This is aroused by ever changing visual and audible stimulation. Edutainment material designers, particularly computer games designers will use the same techniques as those designing TV commercials. This involves using changing colours, moving images, changing scenarios and pitch and volume fluctuations in sounds. These are all factors that motivate the user or viewers curiosity.

The combination of these intrinsic motivators compels the user to learn whatever outcomes are required to reconcile and satisfy their curiosity.

Robotics

Robotics incorporating multimedia is an emerging area of edutainment where interactivity with the device can facilitate learning. Popular examples of these are:

- Electronic toys and pets that require a correct user interaction to move forward in the scenario or to generate motion or a response
- Virtual construction sets and modelling that facilitate procedural and sequential learning
- Assembly kits that require instruction compliance to achieve the satisfactory completion of a virtual or physical artefact
- Robotic or virtual teachers
- Robotic guides for museums, exhibitions, municipal and corporate structures or complexes
- Robotic information dispensers may be described as educating the user concomitant with the information that they deliver

World Wide Web

Edutainment websites proliferate and approach the problem of learning transfer in a variety of ways. These include:

- E-Learning sites where the learning material is converted into graphically illustrated e-books
- Multimedia e-books that include animation, sound and video
- Hypermedia programmes that require the user to move through the site making calculations and decisions in order to navigate the information structure
- Games that require decisions and calculations in order to win or improve
- Quizzes that test the users knowledge and comprehension
- Context specific Religious or Ethically autonomous tests and activities

From an educational perspective the World Wide Web may require careful presentation and structuring to avoid the user focusing too deeply on the entertainment whilst failing to grasp the learning concepts. Analogies have been made with multiple TV channels where the user is unable to focus on a specific topic and is instead allured to surf the channels without assimilating the information contained within. Poorly designed edutainment website may contain only passive learning content that will be overlooked by the user.

Constructivist methodology will greatly improve the knowledge transfer where the learner is intrinsically motivated to participate in the activity i.e. they participate by their own choosing. Further improvement can be achieved by sharing this experiential learning with the user's peers. Either working in groups or individually it is essential to share your methodology, findings and conclusions with your peers, as the subsequent feedback will enhance the comprehension and facilitate new thought branches in addition to resolving wicked problems and correcting mistakes.

Web Quests

An extension of the "drills in game clothing" methodology is the Web Quest; where users or participants construct an interactive quest or goal-orientated web search, setting clues for their fellow participants or players whilst following clues themselves. Learning takes place in the authoring phase where the construction of the worlds, questions, clues, links and rewards requires careful planning and preparation in addition to constructing the multimedia content. Further learning then takes place for the players as they either answer the questions set by the authors using the preset clues or follow their own initiative by navigating the web to attain the goal. Following completion of the quest the players and authors can participate in reflective learning whilst discussing the relative merits and shortcomings of the questions and clues (Perrone *et al*. 2003)

The use of multimedia edutainment material will ensure that the experience will be interesting and engaging and will encourage the user to form mental models and representations of how the information impacts on themselves and their order in a global context. The sharing of this comprehension with peer group members will be encouraged where the information delivery is entertaining.

CD-ROMs

The rapid increase in availability and reliability in cd-rom technology, allied to a marked reduction in costs has lead to an explosion in this industry. The edutainment market was quick to recognise the potential of this medium for creating substantial programmes. The storage capacity of cd-roms (700mgbs) makes them an attractive platform to deliver multimedia rich material, as they are not constrained by bandwidth bottlenecks that can prohibit WWW. delivery and are compatible with the majority of desktop and laptop computers shipped today. Ease of storage and portability make them ideal for distribution amongst learners who can access the learning material either in the classroom environment or at home, at a time that suits them.

The content is available in many forms and uses all the conventional teaching and learning paradigms such as drills, lectures, seminars and tutorials to ensure comprehension and learning transfer. The medium lends itself particularly well to constructivist learning, facilitating simulated worlds, virtual environments and logical journeys.

Global audiences participate daily in simulated world construction and management environments such as SimCity, which is available as a cd-rom based programme linked to the SimCity website for regular updates, or as an online downloadable web based environment.

Here the user can create and manipulate their own vision of how a city should be run, with various scenarios such as disasters, utility and social problems to reconcile and manage. This gives an invaluable insight into social, political and economic structuring in our societies without any of the concomitant risks associated with reality (SimCity, 2003).

One of the most popular maths-orientated programmes is a logical journey and adventure. Here the user has to help a tribe of miniature creatures called The Zoombinis to overcome various perils whilst searching for a new homeland after their Zoombini Island is invaded. The adventure requires the user to customise the tribe before embarking on an exploratory virtual journey, where difficulties are overcome by logical and mathematical decisions. The level of detail and quality of the graphics, animation and sound make this a very popular programme that appeals to all age groups. The programme also has a comprehensive help and resources section. Whilst the learning content may be somewhat overshadowed by the quality of the presentation and levels of interactivity, educationalists are strong supporters of both this package and similar activities (Zoombinis, 2003).

Music

Throughout the history of education, music has been a rich source of edutainment. The skills required to produce music at any level of competence will necessitate both physical and mental dexterity. Participation in a musical performance is a stimulating and character forming social activity. The advent of electronic instruments and their subsequent interfacing with computer technology has brought the production of music within the realms of everyone. It is now possible to compose music without any previous knowledge or musical talent. The capture, recording and digitisation of sounds and music facilitate the mixing and synthesis that will produce a finished piece. However it must be stressed that there is no substitute for talent, ability and perseverance in musical composition, though technology can play a major part in the learning cycle. Computer software allows aspiring musicians to practice programmed exercises that can moderate and correct the user's input, provide feedback and offer examples of correct performance and the necessary tablature and notation to correct any mistakes.

Emulation and composition are not the only learning methodology that music can provide, music can be used as a language in it's own right or as a vehicle for teaching language and grammar at the same time as entertaining.

Examples of these practices would be to play pieces of music or to sing prepared songs that had blank spaces deliberately included. The learner would then be required to fill in the blanks before defining the grammatical type or spelling of the blank. Similarly music or songs can be deliberately disseminated requiring the learner to reassemble them into the correct sequence. These particular activities lend themselves well to CAL (computer assisted learning) packages.

Educational Technology

There is a strong belief that the increasing use of technology, in particular ICT (Information And Communications Technology), within education, will bring about a resurgence of interest and revolutionize teaching methodology in the future, including the use of edutainment materials.

Animals in Edutainment

Whilst it is reasonable to associate edutainment with media and multimedia delivered material, it is not imperative. As the definition requires both education and entertainment to be fulfilled, it is quite possible to utilise living creatures to illustrate and inform the learners. One such example would be the Critterman Animal Ambassador seminars, where the natural curiosity of the audience in living animals is used to stimulate their interest and encourage hands on real life experiential learning. This is supplemented by specific resource materials and is designed to compliment existing science and biology subjects by providing alternative and exciting learning. (Critterman, 2003).

Edutainment Broadcasting

The rise in popularity of natural history, wildlife, ancient history and evolutionary programmes on both TV (television) and Radio has gone someway to increase their educational content and primetime incidence. There remains however a dilemma for the programme writers and controllers, in that educational TV and Radio do not have mass audience appeal. Consequently the prime time edutainment programmes are either biased towards entertainment with only passive educational value, or are scheduled away from primetime slots, as in the case of the Open University series.

Television and the World Wide Web

A partial solution to this dilemma has been the association of analogue TV programmes with digital and interactive websites. This allows educators and learners to have access to specifically prepared educational content, in addition to the more alluring and entertaining content on the TV. All the major channels now utilise this methodology with a particularly good example being the BBC WebWise educational campaign.

Interactive Television

The growth of the Digital and Interactive TV networks allied to the reduction in cost of the apparatus and subscription has expanded the scope of edutainment on TV by the expedient of being able to provide a profusion of channels to satisfy all tastes. The programme producers and schedulers are still faced with the same dilemma as their analogue TV counterparts though, in that education just does not make good TV. In the publication Teaching and Learning Online (Pedagogies for New Technologies) John Stephenson expands at length on the dilution of educational value in TV programmes (Stephenson, 2001). He goes on to cite an eminent academic (Gauntlet, 1995) as considering TV as distorting perception and values, whilst oversimplifying the content and generating passivity and desensitisation in it's viewers.

Computer Based Edutainment Design Problems

As the edutainment market has expanded certain problems have evolved regarding the contemporary validity of the content material and the context of presentation. The companies that are producing edutainment material are predominantly run by business and technology orientated executives, who may be more attuned to the marketability of their products, rather than their teaching and learning outcomes. In addition it is not uncommon for edutainment authors to write their material in their own image (New, April 1998). Ellen Ullman has been quoted as saying that she considered it likely that the creators of the edutainment material would be techno centric rather than educationalists. This has lead to them being biased towards doing "cool things with computers" rather than focusing on learning transfer. The incorporation of the latest software or interactive gizmo into an edutainment package may not guarantee the intended learning outcome.

Edutainment Goals

1. Worthwhile learning objectives
2. Must be fun
3. Must reinforce the learning goals

Conclusion

To produce successful edutainment material that satisfies the educational criteria and learning goals will require considerable research, target audience analysis and testing. This will give rise to further design revision and iterative development. Eventually the optimum solution will be achieved and made available for distribution. Hopefully this will transpire before the shift of contemporary trends renders the edutainment material obsolete.

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